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09 913,423	08/13/2001	Helmut Schiller	101194-33	9510

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EXAMINER

LE, DANG D

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

09/913,423

**Applicant(s)**

SCHILLER, HELMUT

**Examiner**

Dang D Le

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5-7, 9, 10 and 12-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 10, 12-15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 4/3/03 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3, 9, 10, 12-15, and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

2. Claims 5-7 and 16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 5-7 and 16 depend on canceled claim 4. Accordingly, the claims have not been further treated on the merit.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 9, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307) and further in view of Kinoshita et al.

Regarding claim 1, Bustamante et al. show an electric machine (10) with a rotor (30, 38) which is rotatably mounted in a housing (not shown) with a rotor shaft (52)

which extends beyond the housing, a plurality of electromagnet components which are statically disposed in the housing at uniform angular spacing and spaced from the axis of rotation of the rotor, each with a coil core (41, 42) bearing a coil winding (44, 45) consisting of one or more conductors and with permanent magnets (32, 36) which are disposed at uniform angular spacing and are non-rotatably retained in or on the rotor, these permanent magnets each having a pole face aligned opposite the end faces of the coil cores (41, 42) and each having a polarity which is successively reversed in the peripheral direction (Figure 2), wherein the coil cores (41, 42) of the electromagnet components are disposed parallel to the axis of rotation of the rotor shaft (52) in the interior of the housing in such a way that their opposing end faces each lie in two planes which are spaced from one another and extend at right angles to the axis of rotation of the rotor shaft and the ends (46) of the electric conductors which form the coil winding (44, 45) of the individual electromagnet components are interconnected via an electric or electronic control device to form at least two pairs (two for 44 and two for 45) of electrical connections and the rotor has at least two outer armature discs (30, 38) which extend radially to before the end faces of the coil cores and in which the permanent magnets are retained with their pole faces aligned with the respective associated end faces of the coil cores.

Bustamante et al. do not show the radially inner region of the said armature discs being provided with holes, wherein in each case pairs of legs, which succeed one another in the peripheral direction and are each provided with a pole face of different polarity on the free end facing the coil, of the permanent magnets provided in the two

opposing outer armature discs are connected to one another in the end regions remote from the pole faces by a respective yoke which encloses the magnetic field and is made from soft or hard magnetic material, that the armature discs are connected to one another by radially extending walls which form the cavity between the armature discs unto a plurality of chambers which are offset with respect to one another in the peripheral direction and are open towards the electromagnet components, and that the radially inner holes provided in the armature discs each open into the chambers of the rotor.

Bustamante et al. neither show the housing defining an interior which is closed off and sealed against the external atmosphere and wherein the housing and the rotor defining a flow path within the interior and extending through the coil windings.

Pavlovich et al. show the radially inner region of the said armature discs (4, 6) being provided with holes (20), wherein in each case pairs of legs, which succeed one another in the peripheral direction and are each provided with a pole face of different polarity on the free end facing the coil, of the permanent magnets (9) provided in the two opposing outer armature discs (4, 6) are connected to one another in the end regions remote from the pole faces by a respective yoke (10, 11) which encloses the magnetic field and is made from soft or hard magnetic material, that the armature discs (4, 6) are connected to one another by radially extending walls (22 through shaft 7) which form the cavity between the armature discs unto a plurality of chambers which are offset with respect to one another in the peripheral direction and are open towards the electromagnet components, and that the radially inner holes (20) provided in the

armature discs (4, 6) each open into the chambers of the rotor (Figures 1 and 3) for the purpose of reducing heat.

Kinoshita et al. show the housing defining an interior which is closed off and sealed against the external atmosphere and wherein the housing and the rotor defining a flow path within the interior and extending through the coil windings for the purpose of reducing noise and dust.

Since Bustamante et al., Pavlovich et al., and Kinoshita et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the yokes and to include holes and chambers between the armature discs as taught by Pavlovich et al. and to seal the housing and to provide a flow path inside the housing as taught by Kinoshita et al. for the purposes discussed above.

Regarding claim 2, it is noted that Pavlovich et al. also show a row of electromagnet components (13, 14) being provided in the interior of the housing of the machine, and that the rotor having two outer armature discs (4, 6) guided on opposing sides in front of the coil core end faces of the electromagnet components.

Regarding claim 3, it is noted that Pavlovich et al. also show two or (not necessary included) more rows of electromagnet components spaced from one another in the longitudinal direction of the rotor shaft are disposed in the interior of the housing, and that in addition to the two outer armature discs which are guided in front of the outer

end faces of the coil cores, pointing in opposite directions, of the outermost rows the rotor has an additional armature disc with permanent magnets guided into each space between adjacent rows of electromagnet components in front of the end surfaces thereof which face one another, and the pole faces of differing polarity of the permanent magnets which are each exposed on opposing sides of the respective additional armature disc are aligned in the radial direction with the end faces of the coil cores of the rows of electromagnet components.

Regarding claim 9, it is noted that Pavlovich et al. also show the electromagnet components disposed at uniform spacing in the peripheral direction and protrude from the inner face of the peripheral housing wall into the space formed between the armature discs (Figure 1).

Regarding claim 15, it is noted that Pavlovich et al. also show the electromagnet components each held on separate support elements which can each be installed in an associated opening in the peripheral wall of the housing in such a way that the pole faces of the coils of the electromagnet components are in the prescribed assembly position in alignment with the pole faces of the permanent magnets between the armature discs.

Regarding claim 17, it is noted that Bustamante et al. also show the electromagnet components each have two separate coils with opposed directions of winding, and that an electric or electronic control device being provided for the selective electric control of each of the coil windings.

5. Claims 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307) and Kinoshita et al. as applied to claim 1 above, and further in view of Burgbacher (U.S. Pat. No. 5,757,100).

Regarding claim 10, the electric machine of Bustamante et al. modified by Pavlovich et al. and Kinoshita et al. includes all of the limitations of the claimed invention except for each pole face of the permanent magnets having in the peripheral direction an extent which covers two pole faces of the coils of two electromagnet components which succeed one another in the peripheral direction, and that the control means is designed so that in order to drive the rotor this control means switches over the polarity of every second one of the electromagnet components which succeed one another in the peripheral direction with each rotation of the rotor about an angular spacing which corresponds to the angular spacing between two electromagnet components which succeed one another in the peripheral direction.

Burgbacher shows each pole face of the permanent magnets having in the peripheral direction an extent which covers two pole faces of the coils of two electromagnet components which succeed one another in the peripheral direction, and that the control means is designed so that in order to drive the rotor this control means switches over the polarity of every second one of the electromagnet components which succeed one another in the peripheral direction with each rotation of the rotor about an angular spacing which corresponds to the angular spacing between two electromagnet



components which succeed one another in the peripheral direction for the purpose of reducing cogging torque.

Since Bustamante et al., Kinoshita et al., Pavlovich et al. and Burgbacher are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to expand the magnet to cover two pole faces of the electromagnet components as taught by Burgbacher for the purpose discussed above.

Regarding claim 12, it is noted that Burgbacher also shows more than three pole faces of the coils of electromagnet components which succeed one another in the peripheral direction can be associated with each pole face of the permanent magnets, in which the case the control means is designed so that in order to drive the rotor, after the rotor has rotated by an angular spacing corresponding to the angular spacing between electromagnet components which succeed one another in the peripheral direction, the control means successively switches over the polarity of every one of the electromagnet components, which succeed one another in the peripheral direction, of the group of electromagnet components associated with a permanent magnet.

Regarding claim 13, it is noted that Pavlovich et al. also show a position pick-up which senses the relative rotational position of the rotor in the housing associated with the control device for initiating the switching over of the polarity of the electromagnet components.

Regarding claim 14, it is noted that Pavlovich et al. also show the position pick-up constructed as a contactless sensor, particularly an optical sensor, which senses the relative rotational position of the rotor with respect to the housing.

6. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bustamante et al. (U.S. Pat. No. 5,982,058) in view of Pavlovich et al. (U.S. Pat. No. 5,892,307) and Kinoshita et al. as applied to claim 1 above, and further in view of Lin (U.S. Pat. No. 5,977,684).

Regarding claim 18, the machine of Bustamante et al. modified by Pavlovich et al. and Kinoshita et al. includes all of the limitations of the claimed invention except for the machine operating as a generator, wherein the ends of the electrical conductors of each electromagnet component which form the coil winding are connected to the input connections of a separate rectifying circuit, and that the rectifying circuits are connected on the output side to a pair of electric bus lines.

Lin shows the machine operating as a generator, wherein the ends of the electrical conductors of each electromagnet component which form the coil winding are connected to the input connections of a separate rectifying circuit, and that the rectifying circuits are connected on the output side to a pair of electric bus lines for the purpose of generating electricity.

Since Bustamante et al., Kinoshita et al., Pavlovich et al. and Lin are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to operate the machine as a generator and add a separate rectifying circuit as taught by Lin for the purpose discussed above.

Regarding claim 19, it is noted that Lin also shows an electronic inverter circuit being connected downstream of the generator in order to convert the generated direct current into an alternating or three-phase current which is synchronized with the power supply.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Information on How to Contact USPTO***

Application/Control Number: 09/913,423  
Art Unit: 2834

Page 11

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

May 28, 2003

A handwritten signature in cursive script, appearing to read 'Dang D Le'.

DANGLE  
PRIMARY EXAMINER